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DN 130:282889
TI Epoxy resin compositions and semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage
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PA Sumitomo Bakelite Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
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LA Japanese
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* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Title compns. comprise (A) epoxy resins contg. (a) 40-60% .gtoreq.1 epoxy resins chosen from (I) and II (A = G = glycidyl; R = halogen, C1-12 alkyl;

1 = 1-10; m = 0-3; n = 0-4) and (b) 40-60% cryst. epoxy resins (m.p. = 50-150.degree.), (B) phenolic resin curing agents contg. .gtoreq.80% phenolic resins (I) (A = H), (C) curing accelerators, and (D) 80-85% (based on the compn.) fused silica powders and show melt viscosity (MV; at molding temp.) 2-10 Pa-s, dimensional change rate of the cured product (DCR) .ltoreq.0.30%, and glass transition temp. (Tg) .gtoreq.150.degree..
Semiconductor devices are obtained by mounting semiconductor chips on one side of a substrate and sealing with the above compns. on one side of the substrate. Thus, a compn. contg. Epikote 1032H (I) A = glycidyl, n = 0,

1 = 1-10) 5.1, YX 4000H (biphenyl epoxy resin; m.p. = 105.degree.) 5.1, MEH 7500 (I; A = H; m, n = 0; l = 1-10) 5.5, Ph3P 0.1, spherical fused silica 83.0, KBM 503 0.6, carnauba wax 0.3, and carbon black 0.3 part showed MV

= 5 Pa-s, DCR = 0.23%, and Tg = 170.degree. and gave a semiconductor device with good solder and thermal shock resistances and less package warpage.
ST solder thermal shock resistance epoxy resin; semiconductor sealant epoxy resin blend; phenolic resin crosslinking agent epoxy resin; catalyst crosslinking epoxy resin blend; fused silica epoxy resin semiconductor sealing

IT Phenolic resins, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(crosslinking agents; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT Crosslinking catalysts
Electronic packaging materials
Semiconductor devices

TPP
↓ warpage

(epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT Epoxy resins, properties
 RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT Phenolic resins, properties
 Phenolic resins, properties
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (epoxy; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT Crosslinking agents
 (phenolic resins; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT Epoxy resins, properties
 Epoxy resins, properties
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (phenolic; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT **174882-88-3**, E 1032H
 RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (Epikote 1032H; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT **112755-07-4**, MEH 7500
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (MEH 7500; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT 221872-50-0P 221872-51-1P 221872-52-2P 222162-60-9P
 RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
 (crosslinked; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT 603-35-0, Triphenylphosphine, uses
 RL: CAT (Catalyst use); USES (Uses)
 (crosslinking catalyst; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT 50-00-0DP, Formaldehyde, polymers with epoxy resins, phenol, and phenol glycidyl ether, preparation 108-95-2DP, Phenol, polymers with epoxy resins, phenol glycidyl ether, and formaldehyde, preparation 122-60-1DP,
 Phenol glycidyl ether, polymers with epoxy resins, phenol, and formaldehyde 222053-12-5DP, polymers with phenol, phenol glycidyl ether,

and formaldehyde
RL: DEV (Device component use); IMF (Industrial manufacture); PRP
(Properties); PREP (Preparation); USES (Uses)
 (epoxy resin compns. for sealing semiconductor devices with good
solder
 and thermal shock resistances, moldability, and less package warpage)
IT 60676-86-0, Fused silica
RL: DEV (Device component use); MOA (Modifier or additive use); PRP
(Properties); TEM (Technical or engineered material use); USES (Uses)
 (epoxy resin compns. for sealing semiconductor devices with good
solder
 and thermal shock resistances, moldability, and less package warpage)
IT 89118-70-7, YX 4000H 93705-67-0 186104-75-6 221872-49-7
222053-12-5 222162-59-6
RL: DEV (Device component use); POF (Polymer in formulation); PRP
(Properties); TEM (Technical or engineered material use); USES (Uses)
 (epoxy resin compns. for sealing semiconductor devices with good
solder
 and thermal shock resistances, moldability, and less package warpage)